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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,219	06/19/2001	Kars-Michiel Hubert Lenssen	NL 000361	3007

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EXAMINER

STRECKER, GERARD R

ART UNIT

PAPER NUMBER

2862

DATE MAILED: 01/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/884,219

Applicant(s)
Lenssen et al

Examiner
Gerard Strecker

Art Unit
2862



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 6, 2003
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Jun 19, 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01-06-03 has been entered.

Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (6,219,209) in view of Gill (6,275,363, of record).

With respect to claims 1, 5 and 6, Gill (209') discloses (Fig. 7) a magneto-resistive device comprising: a substrate (725) which carries a free (718) and a pinned (720) ferromagnetic layer, said pinned layer comprising a layer system (720) including a stack of three (750, 754, 758) ferromagnetic layers and two (752, 756) intermediate non-magnetic layers. The layer 750 is formed of Co, and layers 754 and 758 may be formed of CoFe (column 7, lines 19-33). The free and pinned layers are separated by a copper spacer 722 (column 7, lines 34-36) as called for in claim 3. The intermediate layers 752 and 756 are formed of RU (column 7, lines 21-25) as called for in claim 4. An exchange biasing layer (AFM layer 724) is arranged adjacent the layer system 720 between the substrate 725 and the layer system, and magnetically influences the system. Since the thickness of the ferromagnetic layers may be within a range (column 7, lines 19-33), selection of different thickness for the individual-layers (claims 7 and 8) would be implicit. Magnetoresistive devices of the type disclosed by Gill are conventionally manufactured for use in data storage systems (claim 9) and as magnetic memories (claim 10).

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Gill (363') discloses (Figs. 11, 12) a magneto-resistive device comprising a free 212 and a pinned (206) ferromagnetic layer separated by a non-magnetic copper spacer layer 304 (Fig. 12) therebetween. The pinned layer comprises a layer system having three (230, 232, 236) non-adjacent ferromagnetic layers in the form of a stack. The layers may all be Co or CoFe, or apparently any permutation thereof. An exchange biasing layer 244 is adjacent the layer system and magnetically influences the layer system. Each of the intermediate layers (228, 234) is a Ru layer.

It would have been obvious to one skilled in the art to make all three of the ferromagnetic layers of Gill (209') CoFe layers, as merely the implementation of a recognized manufacturing option as taught by Gill (363'). Further, with respect to claim 3 although the copper spacer of Gill (209') does not have a Co or Co layer on the side adjacent the free layer, inclusion of such a layer would be a discretionary addition by the skilled artisan, for controlling magnetic coupling or influence.

Claims 1, 4-6, 9 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Gill (6,275,363) as indicated in the discussion of Gill in the rejection above.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (6,275,363).

It would have been obvious to make the ferromagnetic layers outside the track thinner or thicker than the center layer as merely a routine design expedient in consideration of optimum size desirabilities and magnetic coupling requirements for the device.

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Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. At line 2, it is not clear what "the substrate" refers to.

Claim 6 is objected to in that the recitation "within the odd number of non-adjacent ferromagnetic layers form a stack of layers" is awkward.

Any inquiry concerning this communication should be directed to G. R. Strecker at telephone number (703) 305-4937.

Strecker/ek

01/22/03

Gerard R. Strecker
GERARD R. STRECKER
PRIMARY EXAMINER